

The Scientific Ideas of G. K. Gilbert: An Assessment on the Occasion of the Centennial of the United States Geological Survey (1879-1979)
Ellis L. Yochelson (Ed.), Spec. Pap. 183, Geological Society of America, New York, 148 pp., \$17.00.

Reviewed by William Benson

"If G. K. Gilbert isn't the best geologist this country has ever produced, he surely is the one to beat for the title." Thus spoke one of my early mentors on the U.S. Geological Survey, and nothing I have since read, seen, or heard persuades me otherwise. Harold Urey, fresh from the discovery that Gilbert had anticipated by 50 years many of Urey's own ideas about the moon, marveled both at Gilbert's breadth and at his knack "for being right," for right he was on almost all of the varied phenomena toward which he turned his agile mind. Though not so stated (nor perhaps so planned) this theme pervades *Special Paper 183*. As Hunt states (p. 25): "His accomplishments are especially impressive when viewed in the perspective of the status of geologic knowledge at that time."

Gilbert's long and illustrious scientific career was completely intertwined with the beginnings and the early decades of the U.S. Geological Survey, and it seems fitting that the Survey's centennial include a reprise of Grove Karl Gilbert. Such is the purpose of this volume.

The Gilbert commemoration was originally planned as a symposium for the 1979 annual meeting of the Geological Society of America. But Gilbert's many contributions defied compression into any half-day session. Those who attended the symposium, therefore, will find in this volume as many new papers as those they heard in San Diego.

In addition to Yochelson's engaging preface, the volume

comprise 14 chapters, two on Gilbert, his career and his methods, and 12 on his varied contributions to science. A list of chapter titles (condensed and paraphrased below) is impressive:

1. A great engine of research, S. J. Pyne
2. Gilbert's contributions to glacial geology east of the Mississippi, G. W. White
3. Gilbert on laccoliths and intrusive structures, C. B. Hunt
4. Gilbert's studies of faults, scarps, and earthquakes, R. E. Wallace
5. Gilbert's Lake Bonneville studies, C. B. Hunt
6. Pioneering work of Gilbert on gravity and isostasy, D. R. Mabey
7. Gilbert and the moon, Farouk El-Baz
8. Gilbert and ground water, A. F. Agnew
9. Gilbert—Bedding rhythms and geochronology, A. G. Flachar
10. Gilbert and the original barrier shorelines, J. C. Kraft
11. Gilbert and iceberg-calving glaciers, Mair and Post
12. Techniques and Interpretations: Gilbert's sediment studies, B. L. Leopold
13. Gilbert's geomorphology, Chorley and Beckinale
14. Analogies in Gilbert's philosophy of science, D. B. Kits

Indeed the only subject of geology that did not come under Gilbert's analytical scrutiny were petrography, paleontology, and stratigraphy (though one might make a partial case for stratigraphy in view of his work on bedding rhythms). This scope is all the more remarkable when one realizes that nearly 20 years of his middle age were taken up by administrative duties that his research was all but abandoned. As Powell's de facto deputy, Gilbert acquired himself nobly as an administrator, but geologic research was the lesser.

Even long-time admirers of Gilbert may discover new tid-

bits in this set of papers. How many, for instance, know that in the 1890's he tried (unsuccessfully) to persuade the Carnegie Institution of Washington to sponsor a "deep hole for geological research"? Or that his Presidential Address to the American Association of Geographers is the first U.S. paper to deal seriously with earthquake prediction? Or that this paper suggests all the major components of our modern programs? That he even proposed a version of the gap method for locating future quakes? These and many more await the reader.

Gilbert's exemplary literary style is not treated separately, but shows through in the quotations from his papers. As any Gilbert fan knows, he wrote as clearly as he thought, well realizing both the value of accurate communication and the fact that sloppy rhetoric may often conceal imperfect logic. In reply to a friend who had inquired how some recent graduates were faring on the Survey, Gilbert wrote a pithy: "Their geology is all right; teach them to write better English." The admonition obviously bears repetition today.

If *Special Paper 183* has a defect it is the uneven style of the papers, an inevitable consequence of any collection of individual efforts. A few, notably those of Charlie Hunt and Bob Wallace, areaptly enough to rank with Gilbert's own prose. Most of the others are clear and readable, but a couple are ponderous and laborious. No, I'm not going to tell you which, because even they are worth reading.

Historical or commemorative volumes are more often displayed on shelves and tabulae than are read. This one de-

serves a better fate. It has a lot of interesting information, not only about G. K. Gilbert and his factual discoveries but about his wonderfully rational methodologies as well. Who knows? Reading this book may even inspire a trek to the library to sample the original Gilbert, a completely rewarding experience in itself.

William Benson is with the National Research Council, Washington, D.C.

PLANETARY SCIENCE POSTDOCTORAL POSITIONS

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Institute for Astronomy

The Institute for Astronomy anticipates one or more positions to be available in the fall semester 1981 of the postdoctoral level. The positions are full-time, federally funded and annually renewable for a maximum of three years, subject to availability of funds. The selected candidates will carry out theoretical and observational research on a NASA grant for ground-based planetary astronomy. Emphasis is placed on the outer planets and their satellites, comets and asteroids.

Minimum qualifications are a Ph.D. in astronomy or related field with experience in theory and data interpretation in planetary science, with a proven record as a researcher as demonstrated by publications and recommendations of peers. Salary will be commensurate with qualifications.

Submit a curriculum vitae with a list of publications and arrange for two letters of recommendation to be sent to: Dr. John T. Jefferies, Director, Institute for Astronomy, 2660 Woodlawn Drive, Honolulu, HI 96822. Telephone (808) 948-8566.

Applications should be postmarked no later than August 15, 1981.

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acterization; and empirical studies using near field and far field seismic data. Experience in theoretical and observational seismology at regional and teleseismic distances, is highly desirable. Experience in digital time series analysis is desirable. Ph.D. in seismology is highly desirable, however, M.S. level with experience in seismology and explosion seismology will be considered. Salary and benefits are extremely competitive. Resumes along with salary requirements should be submitted to the Personnel Department at the address below, Attention Code SAS, ENSCO, Inc., 5408-A Port Royal Road, Springfield, VA 22151.

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Selenology. Research associate position anticipated (September 1, 1981), telemetry monitoring project in Virginia. Problem focus on seismicity and neotectonics in the state. Prefer M.S. geophysicist with needs in observational seismology, but others considered. Applications, transcripts and two letters of recommendation to: Dr. G. A. Bolinger, Seismological Observatory, VPI&SU, Blacksburg, Virginia 24061. Deadline for receipt of applications is August 1, 1981. VPI&SU is an equal opportunity/affirmative action employer.

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be sent to S. R. Ash, Chairman, Department of Geology/Geography, Weber State College, 3750 Harrison Blvd., Ogden, Utah 84404.

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Marine Geologist/Oceanographer. Ph.D. in geology, 12 years experience conducting physical oceanographic and sedimentologic studies in continental shelf, coastal, and fresh water environments. Thirty professional publications. Seeking challenging position in the New England area. Box 004, American Geophysical Union, 2000 Florida Avenue, N.W., Washington, D.C. 20009.

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Research Seismologist. The Alexandria Laboratories of Teledyne Geotech invites applications from Ph.D.-level seismologists to work on problems related to the comprehensive and threshold test data analysis. Applicants should have background in such topics as theoretical seismology, seismic data analysis, seismic data processing, seismic signal processing, and computer modeling. To apply please send your resume to Jean H. P. Pomeroy, Department, Teledyne Geotech, 1144 Kingman Street, Alexandria, Virginia 22314. An equal opportunity employer.

Plasma Theoretical. Depending on the availability of funds, the Center for Atmospheric and Space Sciences, Utah State University, could have a one year, postdoctoral position in theoretical plasma physics. Candidates should have a Ph.D. degree and a background in nonlinear plasma physics and computer modeling. The appointee will primarily be involved with the development of both 1-D and 2-D numerical models of double layers and electrostatic shocks. Please send a resume and the names of three references to R. W. Schunk, Physics Department, Utah State University, Logan, Utah, 84322. Tel: (801) 750-2674. Application deadline is June 30, 1981. Position available August-September, 1981. Salary range commensurate with experience. Utah State University is an affirmative action/equal opportunity employer.

Research Position in Chemical Oceanography. California Institute of Technology, Division of Geological and Planetary Sciences. This position of research fellow is being offered at Caltech for research in oceanography. Investigation of the isotopic composition of neodymium and rare earth abundances in sea water and sediments is now being carried forward. The mechanism of fractionation of REE into sea water will be studied. The differences in $^{143}\text{Nd}/^{144}\text{Nd}$ in various water masses (Papagos et al., Earth and Planets Sci. Lett. 45, 223-235 and Papeete and Waiau, Earth and Planets Sci. Lett. 50, 128-138 (1980)) is now being carried forward as an exploratory venture in order to determine the origin and chemical behavior of REE in the ocean and the potential use of $^{143}\text{Nd}/^{144}\text{Nd}$ as a tracer. This laboratory facilities for sample preparation and analysis are fully functional and will be available. Applicants should have training in oceanography and a good perspective on general physical oceanographic models.

Send resume and four letters of recommendation to Professor G. J. Wassburg, Lunas Asylum, California Institute of Technology, Pasadena, CA 91125. Caltech is an equal opportunity/affirmative action employer.

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A postdoctoral scientist with several years experience in physical oceanography is required at IADE (Instituto Argentino de Oceanografía), e Joint Institution of the Consejo Nacional de Investigaciones Científicas y Técnicas (National Research Council), the Universidad del Sur, Bahía Blanca, and the Armada Argentina (Argentine Navy).

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Meetings

Joint Oceanographic Assembly

This recently published second bulletin for the Joint Oceanographic Assembly includes a general schedule of sessions, registration information, and a registration form. Scheduled for August 2-13, 1982, at Dalhousie University in Halifax, Nova Scotia, the assembly is sponsored by the Scientific Committee on Oceanic Research (SCOR), the Commission for Marine Geology, the International Association of Biological Oceanography, the International Association of Meteorology and Atmospheric Physics, the Engineering Committee on Oceanic Resources, and the Cen-

tral National Committee for SCOR.

To receive the bulletin and to be included on the list for future mailings, contact Leo O'Quinn, Executive Secretary, Joint Oceanographic Assembly 1982, 240 Spoke Street, 7th Floor West, Ottawa, Ontario K1A 0E6, Canada.

Nonurban Troposphere Symposium

The second Symposium on the Composition of the Nonurban Troposphere will be held the week of May 25, 1982, in Williamsburg, Va. Objective of the meeting is to present the available information on the nonurban troposphere. The symposium is co-sponsored by AGU, the American Meteorological Society, and the National Aeronautics and Space Administration.

Contributed papers are being solicited on the following topics: background and nonurban measurements of tropospheric gaseous and aerosol species; sources and sinks of tropospheric gases and aerosols; interactions of tropospheric gases and aerosols; transport of tropospheric species; stratosphere-troposphere exchange of trace species; models of nonurban troposphere; and interpretation and significance of the composition of the nonurban tropo-

sphere. Deadline for reviewer's abstracts (200-400 words) and shorter abstracts (100 words) for publication in the bulletin of the AMS is October 15. Direct abstracts and questions to Jack Fishman, Program Coordinator, NASA Langley Research Center, Mail Stop 401B, Hampton, VA 23665. 68

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Group fare: minimum 40 passengers traveling together, may return individually; tickets issued 21 days in advance. For those attending both assemblies, fares will be made to obtain suitable flights and fares.

From home city to New York (JFK) there are special add-on fares and, in some instances, super saver or published super-APEX fares that can be used in conjunction with transatlantic flight.

Northwest Airlines has direct service from New York to Hamburg; Northwest twice weekly.

If possible, the group fare, which is the lowest fare, will be used to have 40 passengers traveling over the same route.

IAGA/Edinburgh

August 1 JFK/Prestwick NW #38 depart 7:20 PM arrive August 2 8:00 AM

August 18 Prestwick/JFK NW #39 depart 1:10 PM arrive some day 4:50 PM

